Ana Tsuhlares Hoffman

Ex. 6 Personal Privacy (PP)

I am an intuitive geographer with extensive experience engaging with various stakeholders using data-framed storytelling to support environmental advocacy.

Career

CREATE Lab, Carnegie Mellon University, Pittsburgh, PA

Director of Air Quality Engagement

April 2020 - Present

- Leading the effort to define the CREATE Lab air quality program and navigate it's real-time and future development to work for environmental justice. I establish and sustain key partnerships with citizen teams, environmental advocacy organizations, academics and scientists, and government representatives and agencies throughout the United States, but with a clear focus on Appalachia. I develop priorities and consensus within the CREATE Lab teams and integrate the program's various projects when appropriate. I document feedback loops from partners and stakeholders on tools that serve the public, non-profit, and environmental advocacy needs. I support and manage the software, hardware, and data aggregation teams to create and innovate. I connect lead developers to communities to support the justice-oriented culture of allyship throughout CREATE Lab.
- Co-leading administrative duties for CREATE Lab air quality projects, including budget development from multiple funding sources, including the Environmental Defense Fund, the Heinz Endowments and others, hiring and staffing for each project, and working within Carnegie Mellon University to process funding acquired.

Actions I take in my position as Director of Air Quality Engagement include:

- Coordinating and supporting citizen science efforts throughout Pennsylvania, Ohio, and West Virginia using community-owned tVOC and PM monitoring networks, and modeled pollution path visualizations in partnership with organized community advocate groups, the American Geophysical Union, Environmental Health Project, and Environmental Integrity Project, as well as others.
- Co-designing permitting, and air quality monitoring policy recommendations with individuals from communities affected by unconventional oil and gas extraction and development, and supporting engagement between community partners and EPA Region 5, Ohio EPA, Ohio Department of Health, and Pennsylvania DEP.
- Establishing partnerships to strengthen local data communication work and contribute to similar efforts throughout the US. Partnership examples include Detroit AirNet based from Wayne University, Healthy Gulf and the Air Emissions Environmental Justice Working Group in Louisiana, and advocacy teams in the San Francisco Bay Area to name the most active.
- Seeking new funding opportunities to expand and support the CREATE Lab air quality program, which entails writing and processing proposals. Currently, writing a proposal for the EPA grant competition for Enhanced Air Quality Monitoring Funding under the American Rescue Plan with citizen team partners in Belmont County, Ohio.
- Organizing and facilitating several workshops and events to introduce new data access and visualization tools, namely, EnvironmentalData.org, PlumePGH.org, and VOC.createlab.org

- Representing CREATE Lab air quality work in media and at events facilitated by partner organizations to promote environmental advocacy and learning. Most notable upcoming and past events are: "Preparing for Petrochemicals" with Beaver County community (December 8, 2021), "What's that Smell?" with Energy and Environmental Law Society at the University of Pittsburgh (November 11, 2021), and "Making the Invisible Visible" with Concerned Ohio River Residents and Freshwater Accountability Project (November 2020). Media interaction with Reuters, WESA, Public Source, Pittsburgh City Paper, Allegheny Front, and others.
- Maintaining the field network of Breathe Cams, tVOC monitors, and Spectrometers owned by CREATE Lab through sustaining community relationships as well as the physical air quality monitoring technology network.

Community Coordinator and Air Quality Monitor Technician

May 2016 - May 2020

- Managed the roles and complexities of the air quality sensor evolution, deployment, operation, and understanding
- Breathe Collaborative partnership building
- Met with a variety of community and organizational stakeholders to build trusting and sustained relationships around air quality sensor networks and then installed and maintained Breathe Cam and VOC monitor networks as a technician and analyst
- Mon Valley partnership outreach and public engagement marked by several public events' planning and facilitation

Community Outreach Specialist

June 2014-January 2015

Boards and Organization Associations

Director of the Board, Allegheny County Clean Air Now (ACCAN)

December 2020 - Present

- Lead data analyst on the Board of Directors, providing data summaries and data collection support.
- Engaged with government agencies like EPA Region 3, Allegheny County Health Department, and multiple state and federal elected representatives to advocate for better enforcement of Metalico/Neville Recycling and Neville Chemical.

Member, Association of American Geographers

January 2013 - Present

Education

DePaul University, Chicago IL - Bachelor of Arts in Geography, and Art History with GIS Analyst Certification

August 2009 - December 2014

The Geography Department at DePaul offered an education focused on equity, geographic systems, and mapping.

- I presented my Appalachian Sacrifice Zones project, exploring the implications of depictions of Marcellus Shale natural gas maps at the Association of American Geographers Regional Conference in DeKalb, Illinois.
- I used GIS to map displacement in Chicago caused by gentrification as part of the ongoing work of Dr Euan Hague, department director at the time.

Other Attachment File(s)

*** Mandatory Other Attachment Filename:** 1236-Proof of nonprofit status - FracTracker Allia

Add Mandatory Other Attachment | Delete Mandatory Other Attachment | View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment | Delete Optional Other Attachment | View Optional Other Attachment

EPA KEY CONTACTS FORM

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Authorized Representative: *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name: Prefix: | First Name: Shannon | Middle Name:
Last Name: Smith | Suffix:

Title: Executive Director

Complete Address:

Street1: 216 Franklin St Ste 400
Street2:
City: Johnstown | State: PA: Pennsylvania
Zip / Postal Code: 15901-1911 | Country: USA: UNITED STATES

Phone Number: 8144490659 | **Fax Number:**

E-mail Address: smith@fractracker.org

Payee: *Individual authorized to accept payments.*

Name: Prefix: | First Name: Shannon | Middle Name:
Last Name: Smith | Suffix:

Title: Executive Director

Complete Address:

Street1: 216 Franklin St Ste 400
Street2:
City: Johnstown | State: PA: Pennsylvania
Zip / Postal Code: 15901-1911 | Country: USA: UNITED STATES

Phone Number: 4122127436 | **Fax Number:**

E-mail Address: smith@fractracker.org

Administrative Contact: *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

Name: Prefix: | First Name: Shannon | Middle Name:
Last Name: Smith | Suffix:

Title: Executive Director

Complete Address:

Street1: 216 Franklin St Ste 400
Street2:
City: Johnstown | State: PA: Pennsylvania
Zip / Postal Code: 15901-1911 | Country: USA: UNITED STATES

Phone Number: 4122127436 | **Fax Number:**

E-mail Address: smith@fractracker.org

EPA Form 5700-54 (Rev 4-02)

EPA KEY CONTACTS FORM

Project Manager: *Individual responsible for the technical completion of the proposed work.*

Name: Prefix: Dr. First Name: Ted Middle Name:

Last Name: Auch Suffix:

Title: Great Lakes Program Coordinator

Complete Address:

Street1: 216 Franklin St Ste 400

Street2:

City: Johnstown State: PA: Pennsylvania

Zip / Postal Code: 15901-1911 Country: USA: UNITED STATES

Phone Number: 8023436771 **Fax Number:**

E-mail Address:

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)

Name: FracTracker Alliance.

Address: 216 Franklin St Ste 400

City: Johnstown

State: PA: Pennsylvania Zip Code: 15901-1911

B. DUNS No. 068581459

II. Is the applicant currently receiving EPA Assistance? ☐ Yes ☒ No

III. List all civil rights lawsuits and administrative complaints pending against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

n/a

IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that allege discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

n/a

V. List all civil rights compliance reviews of the applicant/recipient conducted by any agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))

n/a

VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.

☐ Yes ☒ No

a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).

☐ Yes ☐ No

b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.

VII. Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R 5.140 and 7.95)	☒ Yes	☐ No
a. Do the methods of notice accommodate those with impaired vision or hearing?	☒ Yes	☐ No
b. Is the notice posted in a prominent place in the applicant's offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications?	☒ Yes	☐ No
c. Does the notice identify a designated civil rights coordinator?	☐ Yes	☒ No
VIII. Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves? (40 C.F.R. 7.85(a))	☐ Yes	☒ No
IX. Does the applicant/recipient have a policy/procedure for providing access to services for persons with limited English proficiency? (40 C.F.R. Part 7, E.O. 13166)	☐ Yes	☒ No

X. If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.

n/a

XI. If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet Address for, or a copy of, the procedures.

n/a

For the Applicant/Recipient

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

A. Signature of Authorized Official	B. Title of Authorized Official	C. Date
Shannon Smith	Executive Director	03/25/2022

For the U.S. Environmental Protection Agency

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statures and EPA regulations.

A. *Signature of Authorized EPA Official	B. Title of Authorized Official	C. Date

*** See Instructions**

Instructions for EPA FORM 4700-4 (Rev. 06/2014)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.
Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973. The Executive Order 13166 (E.O. 13166) entitled; "Improving Access to Services for Persons with Limited English Proficiency" requires Federal agencies work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Items "Applicant" means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Recipient" means any entity, other than applicant, which will actually receive EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Civil rights lawsuits and administrative complaints" means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. "Civil rights compliance review" means any review assessing the applicant's and/or recipient's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or disability. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable." In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification. * Note: Signature appears in the Approval Section of the EPA Comprehensive Administrative Review For Grants/Cooperative Agreements & Continuation/Supplemental Awards form.

Project Narrative File(s)

*** Mandatory Project Narrative File Filename:** 1249-Final Ohio Air Monitoring Grant Application Narra

Add Mandatory Project Narrative File | Delete Mandatory Project Narrative File | View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File | Delete Optional Project Narrative File | View Optional Project Narrative File

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2022

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Enhanced Air Quality Monitoring for Communities	66.034	$	$	$	$	$
2.						
3.						
4.						
5. Totals		$	$	$	$	$

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Prescribed by OMB (Circular A -102) Page 1

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1) Enhanced Air Quality Monitoring for Communities	(2)	(3)	(4)	Total (5)
a. Personnel	$ 149,625.00	$	$	$	$ 149,625.00
b. Fringe Benefits	20,947.00				20,947.00
c. Travel	16,551.00				16,551.00
d. Equipment	17,748.00				17,748.00
e. Supplies	69,750.00				69,750.00
f. Contractual					
g. Construction					
h. Other	197,251.00				197,251.00
i. Total Direct Charges (sum of 6a-6h)	471,872.00				$ 471,872.00
j. Indirect Charges	23,429.00				$ 23,429.00
k. TOTALS (sum of 6i and 6j)	$ 495,301.00	$	$	$	$ 495,301.00
7. Program Income	$	$	$	$	$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. Enhanced Air Quality Monitoring for Communities	$	$	$	$
9.				
10.				
11.				
12. TOTAL (sum of lines 8-11)	$	$	$	$

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 177,082.00	$ 34,167.00	$ 71,823.00	$ 35,546.00	$ 35,546.00
14. Non-Federal	$				
15. TOTAL (sum of lines 13 and 14)	$ 177,082.00	$ 34,167.00	$ 71,823.00	$ 35,546.00	$ 35,546.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS) (b)First	(c) Second	(d) Third	(e) Fourth
16. Enhanced Air Quality Monitoring for Communities	$ 177,082.00	$ 156,934.00	$ 161,384.00	$ 0.00
17.				
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$ 177,082.00	$ 156,934.00	$ 161,384.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges:

23. Remarks:

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Environmental Protection Agency (EPA)
Enhanced Air Quality Monitoring for Communities
FY 2022 Request for Proposals (RFP) EPA-OAR-OAQPS-22-01

Project Title	**Community-Based Ambient Air Monitoring to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley**
Applicant Information	FracTracker Alliance 216 Franklin St Ste 400 Johnstown, PA 15901-1911 USA *Contact Person*: Shannon Smith, Executive Director *Phone*: (814) 449 - 0659 *Email:* smith@fractracker.org *DUNS No.* 068581459
Set Aside	This project is not applying for a set-aside.
Eligible Entity	FracTracker Alliance is a 501(c)3 nonprofit organization that maps, analyzes, and communicates the risks of oil, gas, and petrochemical development to advance just energy alternatives that protect public health, natural resources, and the climate.
Project Partners (if applicable)	CREATE Lab, Ana Hoffman Environmental Health Project, Jessa Chabeau FreshWater Accountability Project, Leatra Harper American Geophysical Union's Thriving Earth Exchange, Melissa Goodwin
Project Location	Steubenville, OH, Jefferson County 43952 & 43953 Shadyside, OH, Belmont County 43947 Wellsburg, WV, Brooke County 26070 Follansbee and Weirton, WV, Brooke County 26037 & 26062 Moundsville, WV, Marshall County 26041 Weirton, WV, Hancock County 26062
Air Pollutant Scope	Benzene, Toluene, Ethylbenzene, Xylene, Formaldehyde, Carbon monoxide, Hydrogen sulfide, Radon, Methane, PM2.5 and tVOC.
Budget Summary	**Funding Requested**: **$495,301** **Total Project Cost**: **$495,301**
Project Period	November 22, 2022 - November 22, 2025
Short Project Description	This ambient air monitoring project focuses on underserved communities in the heavily industrialized Ohio River Valley, where health indices rank among the worst in the nation. This project expands upon an ongoing community-science project launched in 2020 that uses low-cost monitors to provide real-time data for a variety of pollutants associated with Unconventional Oil and Gas Development (UOGD) and petrochemical-related industries that have rapidly proliferated in the region. Community science has validated residents' concerns, provided opportunities for increased participation and involvement, and supported ongoing efforts to improve air quality in the region.
Attachments included	Partnership Letters, Quality Assurance Statement, Proof of Nonprofit Status, Project Team Biographies, Key Personnel Resumes, Additional Areas Affected by Project, Additional Congressional Districts

Section 1. Project Summary & Approach

A. Overall Project

FracTracker Alliance has partnered with Freshwater Accountability Project (FAP) since 2014 to document the environmental impacts of unconventional oil and gas development (UOGD) as it emerged throughout the shale region of eastern Ohio. In 2020, FracTracker Alliance and FAP collaborated with the American Geophysical Union's Thriving Earth Exchange (TEX) community science program, Carnegie Mellon University CREATE Lab and Environmental Health Project (EHP) to launch a community participatory research project using low-cost air quality monitors in response to citizen complaints of adverse health effects in communities living in close proximity to UOGD. Community citizens have expressed concerns regarding increased pollution burdens from proposed facilities that typically enjoy segmented and expeditious permitting processes that fail to adequately protect environmental and human health by ignoring cumulative impacts. The project, which was carried out as a TEX project, "Analyzing Air Quality and Establishing Baseline Air Monitoring," continues to provide real-time, publicly accessible data for $PM_{2.5}$, total volatile organic compounds (tVOCs), temperature, humidity and barometric pressure. The network's low-cost monitoring project has empowered residents to gather air quality data, use their findings to take protective measures when needed, and communicate with elected officials and local, state and federal regulatory agencies in ways that validate their concerns. This initial project, albeit limited in scope, also provides important insights regarding the effects of weather conditions (e.g., wind direction and speed) and topography on migration of airborne pollutants from point-source emitters (power plants, compressor stations, gas extraction wells, refineries) along a short but populated stretch of the Ohio River.

FracTracker seeks EPA funding to expand the air monitoring network in continued productive partnership with FAP, EHP, CREATE Lab, and TEX. Building upon the demonstrated impact of this community-based science initiative and the ongoing development of UOGD in a high-risk Environmental Justice (EJ) region, funding is needed to expand this project to address local and regional impacts and community concerns. This expansion will achieve the following:

1) Expand the existing community-based science efforts that have successfully deployed 30 Airviz tVOC and 20 PurpleAir low-cost monitors in areas of concern for over two years in the Ohio Valley. This effort will include:
    a) Consultation with community members on locations in need of monitoring
    b) Deployment of additional Airviz and PurpleAir sensors to expand the coverage of monitoring
    c) Use of Summa air sampling and real-time monitors such as Honeywell MultiRAE detectors to chemically speciate VOC samples collected during identified spikes in tVOC through Airviz sensors
2) Disseminate periodic newsletters in collaboration with partners in this proposal, community members, and state and regional regulators and elected officials. These newsletters will:
    a) Provide figures and explanations of data being collected using EHP's data analysis app, AirView
    b) Explain potential environmental exposure routes and health impacts of local pollutants
    c) Include forward dispersion and back trajectory modeling to demonstrate regional pollution pathways
    d) Include community perspective and concerns
3) Provide collected air quality data in online publicly available platforms including voc.createlab.org and map.purpleair.com for real-time, animated monitoring data; and environmentaldata.org and EHP's AirView for in-depth analysis and community access and involvement.
4) Examine stochastic industrial sources (SIS) of harmful pollutants and develop data-based recommendations for better protection of public health, possible mitigation and improved permitting parameters.
5) Collaborate with and empower individuals and organizations at the local, state and regional level to better advocate for improved air quality and human health.

B. Project Significance

The Ohio Valley has suffered a long history of heavy industrial development and coal-fired power plants with the river hosting a coal plant roughly every 38 miles. The Ohio River has been ranked by the EPA as the most polluted inland river in the United States. Air and water quality issues have created a legacy of sickness and poverty in the region as old industrial plants left as brownfield sites or repurposed into frack waste processing facilities. As development in the region

shifted towards UOGD, pollution sources have continued to grow, and as a result UOGD has been shown to have significant adverse impacts on people's health. As UOGD continues to expand, there is an urgent need to quantify the adverse effects that this growth has on ambient air quality and human health, especially in disadvantaged communities like those targeted by this project. There is also a need to foster increased communication among community members and local and regional governments and regulatory bodies to effectively advocate for improved air quality. The initial stage of this work began two years ago with collaboration among all partners in this application in response to community complaints of headaches, fatigue, nausea and more. Citizens expressed concern for proposed construction of a large ethane cracker plant in Belmont County, Ohio similar to the size of the massive Shell petrochemical plant being built 70 miles upriver. Our partnering organizations secured funding from a philanthropic foundation and gained support from the TEX program to install low-cost monitors to capture baseline levels of tVOC and $PM_{2.5}$. The real-time data provided by tVOC and $PM_{2.5}$ monitors allow residents to take precautionary measures (e.g., closing windows, installing air purifiers, evacuating) and provide cues for when summa canisters should be deployed to quantify speciated pollutant exposures. This project has also provided data for community members to bring to permitting and oversight agencies and their health care providers. Building upon the demonstrated success of this community-based science initiative and the ongoing development of UOGD in a high-risk EJ region, additional funding is needed to expand this project to address local and regional impacts and community concerns. Community concerns about VOCs, $PM_{2.5}$, and a targeted list of other hazardous air pollutants (HAPS) will all be addressed by expanding the low cost-monitor network and evaluating select pollutants through directed sampling using summa canisters and downstream chemical speciation. This work will inform and empower community members to advocate for improved air quality and build relations with local elected officials and state and regional regulatory agencies by sharing quarterly project newsletters and engaging in dialogue with the data collected as the base for collaboration. The expansion of the community science air monitoring program in the six counties along the Ohio River will greatly add to the body of knowledge for the EPA. Results from the initial stages of the project have already led to important communication and sharing of results with the EPA. This project and ongoing partner collaboration will be enhanced by adding necessary staff and monitoring capacity to provide more robust data to more adequately characterize the pollutant load in the region, tie it to public health experiences, characterize unique valley conditions, and identify key permitting parameters.

Section 2. Community Involvement

A. Community Partnerships

FracTracker has worked closely with all four of the project partners over the past decade. FracTracker and EHP have worked together on multiple projects, notably on an air quality study in 2019 with residents impacted by fracking development in Southwest Pennsylvania. FracTracker and CREATE Lab worked together in 2014 to track the transportation of volatile crude oil through southwest Pennsylvania, and in subsequent years have shared data, maps, and information related to air quality issues and other environmental threats in the region. FracTracker worked with FAP since 2014 in Southeast Ohio on air and water quality issues. FracTracker has worked with TEX to present the findings of a report mapping hydraulic fracturing freshwater supply and demand in Ohio to the Ohio Department of Natural Resources (ODNR) Division of Water Resources in 2021-2022.

The **American Geophysical Union's Thriving Earth Exchange (TEX)** connects communities to scientists in order to further community science efforts. TEX has partnered with FAP for multiple projects, including an ongoing project that is focused on the initial phase of air quality monitoring in the region. TEX will continue to support ongoing monitoring needs, quality assurance, data analysis, and contribute to written newsletters and presentations.

The **Environmental Health Project (EHP)** is a nonprofit public health organization that defends public health in the face of shale gas development. Since 2012, they have collected, analyzed, and presented shale gas exposure information that informs frontline communities and empowers them to advocate for ending or mitigating harmful emissions. EHP also advocates for a health-protective approach to shale gas industry regulation that places health and wellbeing at the center of policy decisions and ensures safety and health for all. EHP will provide data analysis through AirView to interpret and help communicate information collected by the air quality monitors deployed.

Carnegie Mellon University CREATE Lab is a community-focused technology empowerment and partnership organization. CREATE Lab collaborates on ways residents can combine voices to better document air pollution and to speak with amplified voices. For this project, CREATE Lab will provide and maintain the Environmental Sensing Data Repository (ESDR) infrastructure service for aggregation of air monitor data. They will maintain websites, *voc.createlab.org* and *environmentaldata.org* as publicly accessible data access points throughout the course of the project. CREATE Lab will work with the project partners on strategic planning, including creating materials for regular data newsletters like forward dispersion and back trajectory modeling.

FreshWater Accountability Project (FAP) is a grassroots, statewide organization in Ohio that began in 2012 in response to unconventional oil and gas development and the threat it posed to environmental and human health. FAP is best known for its community organizing and factual advocacy, translating scientific research to communities and policymakers for stronger environmental and public health protections. FAP's use of the community-based science approach supported by TEX has educated and empowered impacted residents to advocate for themselves and engaged regulatory agencies to take appropriate actions.

B. Community Engagement

This project will use community science to make reliable air quality data accessible and understandable to empower community advocacy efforts for improved air quality and public health. Because of the proliferation of UOGD in the Ohio Valley, public health impacts have been downplayed and dismissed despite the growing evidence of harms associated with UOGD pollutant exposures. Without adequate support and often with industrial opposition, communities themselves must become experts in environmental science, seek and obtain funding and equipment, and generate and interpret data. This project will build upon the community science project begun two years ago that has enabled residents to advocate for improved air quality through monitoring and documentation of air pollution associated with health impacts. Through partnerships with community members, advocacy organizations, and health and environmental science experts for over 10 years, FracTracker and project partners have addressed the gaps in community understanding of air quality and the cumulative impacts of UOGD in addition to heavy industrial pollution. This project will maintain and build upon existing community connections, include community input into the monitoring process, provide easily accessible data in multiple formats, host meetings with community and local government officials and incorporate their feedback throughout the process. This project will be a touch point for community members to reach out to have questions answered and concerns addressed. Community input will help guide placement of monitors, and by offering easily accessible air quality data through low-cost monitoring stations, we will expand the existing community science air quality project and build community relations. Residents will learn how to use the real-time, animated sensor maps on voc.createlab.org and map.purpleair.org, so that they may also protect their health through pollution mitigation strategies like turning on air purification systems and closing windows. Leveraging EHP AirView, community members will be educated on air pollution trends and impacts, including meteorological and dispersion modeling. Community-owned monitoring data will be systematically compared with lived experience, and pollutant measures and meteorological data will be used to indicate pollution sources. Residents already participate in documenting health impacts, and we plan to continue to combine this with air quality data, validating community health experiences.

We will build upon trusting relationships that have already been established, inviting community members to provide input about improvements that can be made to the data collection, analysis, and interpretation processes, and including local government in data sharing. Findings from collected data outputs will be shared in newsletters sent to stakeholders including elected officials, regulators, and community members, and they will be posted on FracTracker's website. Flyers and fact sheets will be accessible in print through local libraries, schools, churches, health departments, and municipalities, and by mail for those who do not have internet access. Data summaries will inform government stakeholders of existing ambient air pollution and cumulative impacts. Public and individual meetings will be held at community members' request, incorporating safe protocols to protect from COVID-19 transmission.

C. Community-Based Organization Set-Aside This project is not applying for a set-aside.

Section 3. Environmental Justice and Underserved Communities

The Ohio River Valley has suffered a long history of pollution from heavy industrial development and coal-fired power plants with the river hosting a coal plant roughly every 38 miles. The six counties that make up the Ohio River Valley where this project intends to monitor air quality have a disproportionate burden of poor health conditions such as cancer, COPD, asthma, obesity, and high blood pressure, which can lead to premature death. The counties in this project have high percentages of populations sensitive to air pollution and respiratory disease like children under 5 and adults over 65 years old. Four of the six counties have asthma rates in the upper 90th percentile nationally, and every county covered in this project except Monroe in Ohio has cancer rates in the 90th percentile. Five of the six counties are above the 50th percentile of low income populations nationally, further demonstrating that this six-county area is an environmental justice designated region.

In Ohio and West Virginia, the percent of COVID-19 deaths per capita according to the last published population census in 2019 was 0.32% and 0.37% respectively. Interestingly, the number of cases per capita for the six counties in this project were similar to the overall state average. However, death rates were significantly higher in all six counties. Death rates from COVID-19 in the six counties ranged from 0.43% - 0.57%. The increase in the severity of COVID-19 case outcomes (deaths) in the Ohio River region are alarming and may be indicative of a population where pre-existing conditions caused more severe outcomes.

Table 1 was developed using data from the EPA EJ Screen tool and demonstrates the result of generations of heavy pollution in the valley and the marginalization of residents' experience by the heavily-polluting industries that have subordinated the government's mandate to protect public health for the sake of revenue.

Table 1. Health Indicators and EJ Screen Metrics

Indicator (% of Pop)	Ohio Counties			West Virginia Counties		
	Jefferson	Belmont	Monroe	Brooke	Marshall	Hancock
CDC PLACES Health Indicators						
Arthritis	27.3†	28.1‡	30.0‡‡	32.8‡‡	35.2‡‡	32.9‡‡
Asthma	10.8‡	10.1**	10.6‡	10.4	10.8‡	10.8‡
High Blood Pressure	33.9**	30.4	33.1**	36.9†	36.9†	35.3†
Cancer	6.8‡‡	6.8‡‡	6.7†	6.8‡‡	6.8‡‡	6.7†
High Cholesterol	27.6	28.3	29.2	29.9*	32.2‡	30.9**
Kidney Disease	2.9*	2.7	2.9*	2.7	2.8*	2.9*
COPD	9.4‡	9.0‡	9.9‡‡	8.7†	9.1‡	9.2‡
Heart Disease	6.7	6.5	7.1	7.1	7.5	7.4
Diabetes	11.0*	10.3	10.8*	10.8*	11.6**	11.8‡
Depression	23.7†	23.0	23.5†	28.2‡‡	27.4‡‡	29.2‡‡
Obesity	38.1†	36.6*	36.9*	37.5**	41.1‡‡	37.3**
Stroke	3.5**	3.3*	3.6†	3.2*	3.3*	3.4**
All Teeth Loss	21.1†	18.6**	20.2†	20.2†	20.4†	20.7†
US EPA EJ Screen Metrics						
Low Income	**	*		*	*	**
Unemployment	**	*	*		*	***
Under Age 5	*	*	*	*	*	**
Over Age 64	**	**	**	**	**	***

* Upper 50% Percentile Nationally ** Upper 60% Percentile Nationally † Upper 70% Percentile Nationally
‡ Upper 80% Percentile Nationally ‡‡ Upper 90% Percentile Nationally

As for the EJ Screen: (1) * = It has singular census tracts in the Upper 80% or 90% for that indicator, (2) ** = It has multiple census tracts in the Upper 80% or 90% or simply multiple census tracts in the Upper 90%, (3) **

Section 4. Environmental Results - Outcomes, Outputs and Performance Measures

A.Expected Project Outputs and Outcomes

The main outputs of this project will be data from 100 low-cost monitoring sites, speciated VOC samples, real time data provision, dispersion modeling, and multiple methods of communication with stakeholders. Newsletters to inform residents and other stakeholders of the project results and importance will be posted on websites and social media with distribution to residents participating in the monitoring network and the surrounding community. Improvements and updates to the project will be made throughout the duration based on feedback from regulatory agencies and community stakeholders. Important outcomes include greater public awareness and participation in efforts to improve air quality in the Ohio River Valley, validation of residents' health and environmental concerns, and increased engagement with local government on permitting processes. Grassroots partners, community groups and environmental advocacy organizations will collaborate together and participate in generating support for the community program. See **Table 2 below** for a summary of expected outputs and outcomes.

Table 2. Summary of Expected Outputs and Outcomes

Activities	Outputs	Outcomes
- Purchase and deploy 80 low-cost monitors - Community led monitor placement - Install and maintain monitors	- Air quality data made available through online platforms, newsletters, social media, community town halls and webinars.	- Data collection on air pollution trends - Residents living near UOGD have the opportunity to protect themselves when monitor readings show high levels of pollutants.
- Produce ArcGIS maps of industrial air pollution sources - Dispersion and back trajectory modeling	- Cumulative visuals of UOGD pollution sources - Visual characterization of air flows in the Ohio Valley	- Increased understanding of the scope of UOGD and pollution exposure effects - Improved understanding of pollutant dispersion, informing monitor placement
- Teach residents how to access low-cost monitoring data	- Active community use of web platforms provided through project partners	- Increased community awareness and engagement on air pollution and permitting - Real-time data to inform residents about actions to mitigate pollution exposure
- Install Sensit SPod air samplers - Distribute summa canisters and train residents on sampling methods - Systematic comparisons of summa samples with low-cost monitors, MultiRAE and residents' health logs	- VOC data for quality assurance through multiple sampling techniques. - Speciated data of pollutants for correlation with documentation provided by community members.	- Assessments of low-cost sensor threshold output, pathways of environmental exposure, and health impacts. - State and local government collaboration - Mitigation action(s) from parties responsible for certain air pollution
- Communication with community members, environmental groups, and regulatory agencies	- Quarterly newsletters: – distributed to libraries and municipal buildings in print – posted on websites – shared with EPA Region 5, Ohio EPA, ODNR, and Ohio Department of Health	- Increased access to information and tools improving understanding and reduction of environmental and human health risks. - Deepened relationships between project organizations and government agencies - Validation of residents' health and environmental concerns

- Town hall meetings and individual meetings with community members and officials - Webinars on project progress - Conference on project results	- Events recorded and shared in newsletter and websites - White paper to share results	- Increased understanding and participation by community members and stakeholders. - Broader community engagement and media coverage

B. Performance Measures and Plan

FracTracker's performance measures and plan are in accordance with the EPA policy requirements specified in the National Term and Condition for Subawards. Each of the Subrecipients will be required to submit a detailed scope of work describing their role, responsibilities, and deliverables. The Project Manager will be responsible for creating a detailed project timeline with milestones and planned expenditures. Each of the Subrecipients should agree to the overall project timeline and milestones before project implementation begins. FracTracker will share a performance measurement tool with all Key Personnel, to be updated with metrics and a written progress report on a monthly basis. The Project Manager will review metrics on a monthly basis and compare with milestones listed within the project timeline. The Project Manager will meet with the Key Personnel to address any discrepancies between the scope of work and performance. Suggestions for improvement as the project progresses will be incorporated into monthly reports for continuous improvement of reporting and results. Monthly reports will be shared with the Authorized Representative (FracTracker Executive Director), for review and approval. The Authorized Representative will approve all expenditures and purchases on a monthly basis, based on performance as described in the project timeline. Each of the Key Personnel will submit monthly timesheets to be approved by the Authorized Representative in order for the Administrative Contact to disperse salaries, wages, and fringe benefits.

C. Timeline and Milestones

Most activities will be ongoing, such as QA assessments for instruments and low-cost monitor comparisons and data analysis to compare results with high cost monitor results and summa sampling. Identification of "hot spots" for summa deployment and for three-dimensional modeling of contaminant plumes and concentrations is ongoing and will vary over time. Review of dispersion analyses and continued communication with USEPA and state/local agencies will be ongoing to develop collaborative relationships. Community outreach and responsiveness will take place throughout the entire project. Webinars and in-person meetings will be held on a regular basis and in response to resident requests. These will be recorded and uploaded to websites and social media. Press releases and newsletters will be sent out at the beginning of the project and on an as-needed basis with a minimum of six newsletters. FracTracker will provide quarterly reports to EPA on project progress, including:
1) Planned activities and technical progress in the completed quarter and planned activities for next quarter,
2) Summary of expenditures on activities in the completed quarter and planned expenditures for next quarter, and
3) Technical problems or issues and their resolution.
FracTracker will also provide a final report to EPA within 120 calendar days of completion of the project. This report will include a summary of project activities and expenditures and a discussion of problems, successes, and lessons learned from the project.

11/22	Grant Award
11/22 - 1/23	Press release issued. Equipment bids and orders completed. FracTracker fellow interviews.
2/23 - 3/23	AirView development and integration with existing low-cost monitoring network. FracTracker fellow hired. First quarterly report submitted. Equipment delivered as available considering supply chain issues.
3/23 - 10/23	Community meetings. Webinar presented. ArcGIS maps of industrial air pollution sources developed and placed on-line. Pollutant plume analysis. Drone data gathered for three-dimensional mapping.
9/23 - 12/23	Data analysis for recommendations for year end report. Webinar developed and presented to share a summary of first year performance and results.
1/24 - 3/24	Analysis of data to compare different sensors and identify "hot spots" to prioritize for monitoring and reporting. Plan drone routes for sampling and to develop three dimensional mapping.
3/24 - 10/24	40 additional monitors deployed.
5/24 - 8/24	Data assembled for modeling and EHP AirView updates.
9/24 - 12/24	60 community member households participating with low-cost monitors, documentation and analysis of results with summa comparisons.
1/25 - 2/25	White paper completed for journal submission. Community conference planning begins.
2/25 - 9/25	Final 20 low-cost monitors deployed. Year end conference planning and outreach.
10/25	Conference held with featured speakers including regulators to present project results and white paper with recommendations for ways to improve regional air quality and public health.
11/25	Project results finalized. Final report submitted. All equipment inventoried with disposition for future use.

Section 5. Quality Assurance Statement

FracTracker understands the need to carry out work under this potential agreement within a quality assurance system commensurate with the degree of confidence needed for the environmentally related data operations, and intends to carry out such quality assurance in accordance with the plan described in the Quality Assurance attachment to this application.

Section 6. Programmatic Capability and Past Performance

A. Past Performance

FracTracker Alliance has been in operation for over ten years and in that time has successfully managed numerous grants and cooperative agreements.

- Along with project partner EHP, FracTracker was awarded $100,000 from the Colcom Foundation in support of the project "Preventing Oil and Gas Impacts: Citizen Science and Technical Assistance for SWPA Communities." Over the period of 2018-2019, FracTracker and EHP installed air monitoring systems in Allegheny County, PA, and

mapped Allegheny County air pollution, focusing on townships with increased fracking activity. Using SPECK indoor and Purple Air outdoor monitors, air quality in eight Allegheny County municipalities were tracked.

- The Heinz Endowments awarded FracTracker a $550,000 grant over the period of 1/1/20 - 12/31/21 to fund two projects: 1) Expand assistance to communities and organizations in the greater Ohio Valley and Gulf Coast regions; (2) Increase service provision of maps and data analysis in support of organizations and academic efforts. As part of this agreement, FracTracker worked with EHP on a community air monitoring initiative. Results were shared with community members, PA State Representatives and the Allegheny Health Department.
- The 11th Hour Project awarded a $175,000 grant to FracTracker over the period of 9/1/20 - 8/31/21 to increase public understanding of health risks presented by oil and gas development. FracTracker performed essential analyses on important health, environmental, and economic questions relating to the hydrocarbon industry and its projects and activities.
- The Community Foundation for the Alleghenies awarded FracTracker a $50,000 grant over the period of 5/1/19 - 12/31/20 in support of the project "Appalachia Regional Power Mapping of Oil, Gas, and Petrochemical Infrastructure"

B. Reporting Requirements

In the past three years, FracTracker has successfully completed projects under assistance agreements (in the form of grants) from 39 other non-federal sources. Of the grants listed above, each of the funders renewed their assistance agreements—a testament to FracTracker's efficacy in carrying out projects as planned through careful monitoring and project management. In each case, FracTracker consistently met its interim and final reporting requirements in a timely manner and according to the requirements of each funder. Most of the assistance agreements have required performance measurements, outcomes and outputs, financial reports, and a narrative portion describing achievements and lessons learned. FracTracker successfully managed these projects through a combination of direct oversight and forming partnerships with others to expand areas of expertise not found within the organization, making the most efficient and cost-effective performance results possible.

C. Staff Expertise

FracTracker Alliance: Dr. Ted Auch, Great Lakes Program Coordinator, will be the Project Manager for this project (See attached resume). Dr. Auch's dissertation at the University of Vermont (UVM) was titled "Modeling the interaction between climate, chemistry, and ecosystem fluxes at the global scale." During his ten years with FracTracker, Dr. Auch has contributed hundreds of maps and articles, providing the public with data essential to achieving environmental health. He has managed multiple collaborative projects on topics related to the impacts of oil and gas development on public health. Shannon Smith, Executive Director, received her bachelor of arts degree from Reed College and has worked in nonprofit upper management for eleven years, focusing on grant administration, project management, and communications. She has successfully managed over 40 grants during her time with FracTracker. The Air Monitoring Fellow will be hired by FracTracker during the first quarter of the project period based on required expertise.

PARTNER ORGANIZATIONS

FreshWater Accountability Project: Leatra Harper, Managing Director of FAP has prior project management experience with a software provider and as a government contract administrator and most recently as project manager for the ambient air monitoring community-science initiative. Dr. Yuri Gorby is the FAP lead scientist and has guided, implemented and reported for community air quality concerns along with other environmental issues in the valley.
CREATE Lab: Ana Hoffman, Director of Air Quality Engagement at Carnegie Mellon University CREATE Lab, has a BA in Geography and is a certified GIS analyst from DePaul University. She is an intuitive Geographer with extensive experience for the last eight years engaging with various stakeholders using data-framed storytelling to support environmental advocacy.

Environmental Health Project: Jessa Chabeau, Regional Manager (Appalachia) at EHP, received her BA in sociology from the Pennsylvania State University and her MSW from the University of Pittsburgh. Jessa has worked in the public health nonprofit sector for over nine years focusing on grant administration, project management, and community engagement. Nathan Deron, Environmental Data Scientist at EHP, received his BS in Political Science and Sociology at the University of Pittsburgh and his MS in Public Policy, Management, and Data Analytics from Carnegie Mellon University. Nathan has worked in the nonprofit sector for 6 years and has extensive experience in conducting data reviews and analyses and performing atmospheric and dispersion modeling.

Section 7. Budget

A. Budget Detail

The proposed budget for the project is $495,301 total. FracTracker is requesting $495,301 in grant funding from the EPA. FracTracker will provide fiscal management and program oversight to ensure that the goals of the project, as outlined in this application, are achieved in a timely manner. FracTracker and Freshwater Accountability Project will work together on project specifications and procurement processes. Staff from CREATE Lab, Environmental Health Project, and Thriving Earth Exchange will provide technical assistance as needed.

PERSONNEL – FracTracker Alliance	**EPA Funding**
Salaries and Wages	
Executive Director @ $65/hr, 4.1666 hr/month, 36 months	$9,750
Great Lakes Program Coordinator @ $55/hr, 6.25 hr/month, 36 months	$12,375
Air Monitoring Fellow @ $23/hr, 162.4 hr/month, 34 months	$127,500
TOTAL PERSONNEL	**$149,625**
FRINGE BENEFITS	**EPA Funding**
14% of Direct Personnel Costs	$20,947
TOTAL FRINGE BENEFITS	**$20,947**
TRAVEL	**EPA Funding**
Mileage for PM: 105.84 mi/month @ $.585/mi x 36 months	$2,229
Mileage for Fellow: 388.24 mi/month @ $.585/mi x 34 months	$7,722
Food Stipend for PM: $100/month x 36 months	$3,600
Lodging for PM: 5 trips/year @ $200 per trip x 3 years	$3,000
TOTAL TRAVEL	**$16,551**
EQUIPMENT	**EPA Funding**
Sensit SPod w/ 3-year support @ $8,874/unit	$17,748
TOTAL EQUIPMENT	**$17,748**
SUPPLIES	**EPA Funding**
80 Low cost monitors @ $350/unit	$28,000
2 Honeywell MultiRAE monitors @ $4,075/unit	$8,150
60 Summa canisters @ $410/unit	$24,600
30 Methane Monitor + CO monitors @ $100/unit	$3,000
2 Protective Equipment Case @ $500/unit	$1,000
PPE (Masks/Gloves)	$1,000

Outreach Materials and Supplies	$2,000
1 Laptop Computer @ $2000/unit	$2,000
TOTAL SUPPLIES	**$69,750**
OTHER	**EPA Funding**
Subaward Costs - Freshwater Accountability Project	$82,500
Subaward Costs - CREATE Lab	$81,000
Subaward Costs - Environmental Health Project	$27,901
Community Meeting Logistics	$750
Public Conference Logistics	$5,100
TOTAL OTHER	**$197,251**
INDIRECT	**EPA Funding**
Total Direct Costs (Indirect Rate of 5% x Total direct costs = Indirect Costs)	$23,429
TOTAL INDIRECT	**$23,429**
TOTALS	**EPA Funding**
TOTAL FUNDING	**$495,301**
TOTAL PROJECT COST	**$495,301**

Annual Salaries: Executive Director – $92,500; Great Lakes Program Coordinator – $76,500; Air Monitoring Fellow – $45,000

B. Reasonableness of Costs

The personnel costs will be used to cover the time of three FracTracker staff necessary to carrying out the program: Shannon Smith, Executive Director, who will be responsible for grant administration and program oversight; Ted Auch, Great Lakes Program Manager, who will be responsible for project management and aerial air monitoring; and the Air Monitoring Fellow who will be responsible for quality assurance and quality control as well as community relationship building, outreach and communications. Travel time was calculated using standard IRS mileage rates for 2022. The Project Manager and Air Monitoring Fellow will utilize these funds to support the time needed to monitor sites, collect data, and coordinate with project partners.

Supplies

80 low-cost monitors will be purchased from **PurpleAir and Airviz** companies and the data output from these monitors will serve several purposes. First, real-time data will inform homeowners when to collect summa air samples. These monitors will also provide real-time data to residents, which will inform in-the-moment pollution mitigation strategies like turning on air filtration units, closing windows or leaving the home. Third, data collected by 100 low-cost monitoring stations will provide unprecedented insights regarding the environmental fate of point-source airborne pollutants throughout the Ohio Valley, with particular considerations for meteorological and topographic influences. This increased engagement with air quality data and monitoring technology will increase collective community knowledge about air quality information in the region.

Two industry-standard instruments (**Honeywell MultiRAE handheld chemical detectors**) will provide real-time data for four HAPs (benzene, formaldehyde, carbon monoxide and hydrogen sulfide). TO-15 and fixed gas summa air sampling

will be initiated based on low-cost sensor readings, MultiRAE chemical detector, previous chemical specific results (when available) and resident air quality and health reports.

Two **Pelican cases** will be purchased to protect the Honeywell MultiRAE chemical detectors and Sensit SPod monitors in transit and storage. This will be necessary since they will be transported often in response to community health concerns. Low-cost indoor Methane/CO monitors will be made available to affected households in which these odorless gasses are suspected to be present. For consistently high pollution areas and/or those households with severe health effects and/or small children and elderly people, a stationary monitor will be used to show the continuous air quality levels which can be compared to the tVOC meters to check accuracy and to determine actual levels of measured pollutants and possible sources.

Equipment

The **Sensit SPod** system ensures summa canister samples are taken when pollutants of concern are present while providing additional weather data that allows for more accurate analysis of potential sources. Summa canister samples allow for the collection of highly reliable data relatively easily and with a variety of time frames ranging from grab samples to 24-hour samples. This combination of flexibility, ease of collection, and quality allows project partners to better analyze and describe to the community the health effects associated with air toxics found in the ambient air.

Direct Costs

EHP will provide data analysis through AirView to interpret and help communicate information collected by the air quality monitors deployed.

CREATE Lab will maintain multiple, publicly accessible air pollution data tracking websites and support creation of data summary reports.

FAP will provide local scientific support, community organizing and communication support including listserv and social media exposure, and build alliances and collaborations with stakeholders including regulatory and government bodies.

C. Expenditure of Awarded Funds

FracTracker will expend awarded grant funds in a timely and efficient manner in accordance with our grant administration procedures. FracTracker has written procedures relating to the planning and budgeting process; authorizing spending; timekeeping and labor documentation. In addition, FracTracker completes an annual review and update of policies and procedures documents. FracTracker's financial tracking system shows spending within and across each fiscal year, and we perform regular reconciliations of financial accounts. We are able to relate our financial data to performance accomplishments to ensure accountability to various funding sources. FracTracker demonstrates effective control and accountability for all cash, property and other assets through yearly independent audits. FracTracker's internal controls are in compliance with the U.S. Constitution, Federal statutes, regulations, and the terms and conditions of the Federal awards, as well as the guidance in "Standards for Internal Control in the Federal Government" issued by the Comptroller General of the United States. FracTracker's preventative controls to limit risk of asset loss include segregation of duties among the Executive Director, Development Manager, Accountant, and Board of Directors. Our accountant verifies budgets for each grant or assistance agreement, and tracks spending through monthly reports, submitted with receipts and approved by the Executive Director. The Board reviews and approves each individual budget by line item, along with FracTracker's total expenditures and revenue on a quarterly basis. If awarded, FracTracker will monitor all expenses related to the EPA air monitoring grant on a monthly basis and comply with all EPA reporting requirements.

OMB Number: 4040-0004
Expiration Date: 12/31/2022

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 03/25/2022

4. Applicant Identifier: HMNYYBMCWQ48

5a. Federal Entity Identifier: HMNYYBMCWQ48

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: FracTracker Alliance.

* b. Employer/Taxpayer Identification Number (EIN/TIN): 80-0844297

* c. Organizational DUNS: 0685814590000

d. Address:

* Street1: 216 Franklin St Ste 400
Street2:
* City: Johnstown
County/Parish:
* State: PA: Pennsylvania
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 15901-1911

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:
* First Name: Shannon
Middle Name:
* Last Name: Smith
Suffix:

Title: Executive Director

Organizational Affiliation: FracTracker Alliance.

* Telephone Number: 8144490659
Fax Number:

* Email: smith@fractracker.org

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

M: Nonprofit with 501C3 IRS Status (Other than Institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities Relating to the Clean Air Act

*** 12. Funding Opportunity Number:**

EPA-OAR-OAQPS-22-01

* Title:

Enhanced Air Quality Monitoring for Communities

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

1234-Areas Affected by Project attachment.p | Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Community-Based Ambient Air Monitoring to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: PA-013 * b. Program/Project: OH-006

Attach an additional list of Program/Project Congressional Districts if needed.

1235-Additional Congressional Districts At | Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 11/22/2022 * b. End Date: 11/22/2025

18. Estimated Funding ($):

* a. Federal	495,301.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	495,301.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name: Shannon

Middle Name:

* Last Name: Smith

Suffix:

* Title: Executive Director

* Telephone Number: 8144490659 Fax Number:

* Email: smith@fractracker.org

* Signature of Authorized Representative: Shannon Smith * Date Signed: 03/25/2022

Robotics Institute
Carnegie Mellon

5000 Forbes Ave., NSH 4629
Pittsburgh, PA 15213
Phone: (650) 575-1612

FracTracker Alliance
216 Franklin St Ste 400
Johnstown, PA 15901-1911 USA

Dear Shannon Smith, Executive Director,

Carnegie Mellon University CREATE Lab writes to eagerly attest our commitment to partner in the "Community-Based Ambient Air Monitoring Project to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley". CREATE Lab will provide and maintain the Environmental Sensing Data Repository (ESDR) infrastructure service for aggregation of air monitor data, on which parts of this proposal depend, including the EHP's AirView analysis. CREATE Lab will maintain websites, voc.createlab.org and environmentaldata.org as publicly accessible data access points throughout the course of the project. Lab staff will add new sensors acquired through the grant into these platforms, and iterate on platforms based on community, partner, and government stakeholder feedback. Ana Tsuhlares Hoffman from CREATE Lab will spend approximately 20hours/month engaging in strategic planning and community engagement, including supporting the creation of materials for quarterly data reports. This may entail developing systematized methods for viewing SUMMA air sample analysis, next to air monitoring data, and health data recorded by the community. CREATE Lab will engage partners in the project and create tailored analyses and visualizations that can enhance reports, such as forward dispersion and back trajectory modeling.

We are excited to build upon years of collaboration with FracTracker Alliance and the other partner organizations for this project. We have worked together to engage community-based organizations and respond to needs to map Unconventional Oil and Gas Development (UOGD), make monitoring data and monitoring locations publicly accessible information, and to generally be reliable partners to the environmental advocacy efforts we support. We see this project as a continuation of that work and are very hopeful for the opportunity to expand and enhance our current scope.

Thank you for submitting this application for funding under the EPA-OAR-OAQPS-22-01 Enhanced Air Quality Monitoring for Communities Grant.

Sincerely,

Ana Tsuhlares Hoffman she/her
Director of Air Quality Engagement
Carnegie Mellon University CREATE Lab

March 7, 2022

Shannon Smith
FracTracker Alliance
216 Franklin Street
Suite 400
Johnstown, PA 15901

Dear Ms. Smith:

The Environmental Health Project (EHP) is a nonprofit public health organization that defends public health in the face of shale gas development. We collect, analyze, and present shale gas exposure information that informs frontline communities and empowers them to advocate for ending or mitigating harmful emissions. We work alongside individuals, communities, and health professionals to educate residents on exposure pathways and health impacts, and to promote the adoption of strategies that better protect them from shale gas pollution. We advocate for a health-protective approach to shale gas industry regulation that places health and wellbeing at the center of policy decisions and ensures safety and health for all.

EHP will support *Community-Based Ambient Air Monitoring to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley* by providing data analysis to interpret and help communicate the information collected by the new air quality monitors deployed through this grant. EHP will use the existing AirView analysis app for continuous monitors and help communicate the results of any sampling conducted. EHP's AirView app provides access to real-time analysis of air monitoring data to communities affected by the shale gas industry. For all continuously monitored pollutants, the AirView app collects data from deployed community monitors and provides three main ways to interact with that data as described below.

- The first tool, Monitor Feed Visualization, allows residents to see the output of their monitors in a more interactive format than what is presented in the interfaces provided by the monitor manufacturers. This visualization also displays additional context, including how significantly weather conditions affect population dispersion on an hourly basis and the operating status of a local pollution emitter of concern, where applicable.
- The second tool, Exposure Measures, generates measures of the pollution exposures seen by the connected monitors. These measures are then compared to other EHP monitoring locations and applicable EPA standards to help communities understand whether they should be concerned about pollution exposures in their area.
- The third tool, Impact Analysis, looks to identify from where pollution exposures likely come. This tool uses weather data from the National Oceanic and Atmospheric Administration and the National Weather Service to make plots that show recorded

pollution levels at the monitor location, based on different combinations of wind speed and direction.

EHP's AirView app for data analysis and interpretation will allow communities to determine the extent of extreme episodic exposures to shale gas facilities in their community over time. The tracking of changes is crucial because these exposures are known to cause harm to the respiratory, cardiovascular, and neurological systems, as well as impair the development of infants and children. Evidence of these periodic, high exposures demonstrates how current air regulations fall short of protecting affected communities.

This information is crucial to stakeholder education, which has been EHP's primary area of focus, be it in outreach to health professionals through our quarterly newsletter and training seminars, facilitation of community science projects through our Environmental HealthWatch Model, hosting community meetings for impacted residents, or engaging in dialogues at the local, state, and federal levels to support health-protective policies. EHP has continued to participate in several coalitions focused on air quality, methane emissions, petrochemical development, and cancer. We have been recognized by our collaborators as the voice of data-based public health expertise in all these groups.

We look forward to helping communities in the Ohio River Valley better understand their air quality so they can make better-informed decisions about their health and advocate for health-protective policies.

Sincerely,

Jessa Chabeau, MSW
Regional Manager, Appalachia

March 23, 2022

FracTracker Alliance
216 Franklin Street
Suite 400
Johnstown, Pennsylvania 15901

ATTN: Shannon Smith

SUBJ: Partner Letter for USEPA Grant Proposal

RE:

Dear Shannon,

FreshWater Accountability Project (FAP) is pleased to partner with FracTracker Alliance and is fully committing to leveraging all our experience, expertise and resources into the successful completion of the referenced USEPA grant RFP. During that time, the organizations have partnered with one another and others, including the Environmental Health Project and CREATE Labs, to provide support and necessary exertise and input to collaboratively achieve project successes for all our organizations. For instance, since FracTracker scientist, Ted Auch, was first hired, FAP and other local, grassroots organizations which it supports in the region of Unconventional Oil and Gas Development (UOGD) have provided impacted community members with the support and data necessary to effectively advocate for better environmental and public health protections in the regions of Ohio and the Ohio River Valley targeted for additional petrochemical development. For instance, FAP was able to reach out to communities that FracTracker has identified as areas of high pollution impact by UOGD, specifically raising the questions about cumulative permitted pollutants and ties to documented health impacts. The need to quantify total pollutants in a valley, look at how the pollutants travel and concentrate, and reliably measure harmful pollutants in real time was identified. From there, FAP decided to apply for grant funding to determine baseline air quality levels in the region of this grant proposal, starting in Belmont County and expanding out by following the data and self-reported lived experiences of community members. With FracTracker's assistance and in collaboration with AGU's Thriving Earth Exchange (TEX) scientists, CREATE Lab and EHP and community members from Concerned Ohio River Residents (founded by FAP), we were able to continue and expand community awareness, involvement and empowerment efforts despite the pandemic to safely meet people in their homes with proper protection and to participate in zoom town halls and present two webinars, "Making the Invisible Visible," Our team efforts are ongoing in our weekly meetings with all those partnering organizations on this project as they can attend which

has resulted in a robust databank and substantiation of the need for our team to continue its efforts, especially given the community need and the interest and involvement it has developed.

From this two-year project, we have built a strong team focused on specific outcomes, prioritizing by concerns from community members and documented health effects from residents living in the region near UOGD.

FreshWater continues to support the important work of FracTracker by any means available. In the past, that has also included the gathering of information through public records request and the analysis of water quantity and quality impacts by the UOGD. FAP has commissioned a report from FracTracker presented to the Muskingum Watershed Conservancy District (MWCD) highlighting the "non-trivial," impacts to water quanity, specifically environmental flow, in the region. These efforts continue and are expanded through the sharing of volunteers and interns as well as data compilation and communication to local stakeholders.

FAP and FrackTracker will continue their mutually-beneficial relationship of eight years, expanding on the opportunities to work together for the referenced grant if awarded. It is certainly hoped that our complementary efforts of data gathering, analysis and reporting combined with FAP's community organizing efforts will be funded so we can successfully expand our efforts together and provide grant deliverables that will justify the large expenditure of funds by the USEPA to improve the air quality for millions of people living in the valley who have long suffered from the environmental injustices of heavy coal and industrial development, exacerbated by UOGD and the lack of adequate oversight, monitoring and regulation of heavy polluters. This will achieve economic and public health equity and give the region a chance for a better future for generations to come.

Sincerely,

Lea (Leatra) Harper
Managing Director

FWAP.org wewantcleanwater@gmail.com P.O. Box 473, Grand Rapids, OH 43522

EARTHJUSTICE
BECAUSE THE EARTH NEEDS A GOOD LAWYER

Shannon Smith
Executive Director
FracTracker Alliance
216 Franklin St., Suite 400
Johnstown, PA 15901

March 9, 2022

Dear Shannon,

We submit this partnership letter in support of FracTracker Alliance's ("FracTracker" or "Applicant") grant application to U.S. EPA. Applicant's community-driven air monitoring project focuses on overburdened communities in Appalachian Ohio and West Virginia—a region currently targeted for an onslaught of new industrial development at a time when the data needed to protect public health is woefully insufficient. Applicant is well positioned to 1) support local Appalachian communities in ambient air monitoring; 2) effectively communicate results of that monitoring to a wide variety of audiences; and 3) partner with communities, organizations, and local, state, and federal agencies to develop and implement actions to protect public health and begin repairing environmental injustices.

Applicant's project would help fill existing gaps in air monitoring in the Appalachian Ohio River Valley. This work is extremely needed. For every Ohio River county where Ohio EPA has a VOC or heavy metal monitoring station, the cancer risk from ambient air pollution exceeds 1 in 10,000—U.S. EPA's upper limit for "acceptable risk."[1] These counties are all designated as either "at-risk" or "transitional" counties by the Appalachian Regional Commission and are home to multiple economically distressed communities.[2] Ohio River counties now face continued oil and gas development and are targeted for a petrochemical buildout that would involve unprecedented levels of VOC emissions. Many of those counties most heavily targeted—such as Belmont County, Ohio—lack any state VOC monitor. Initial results from Applicant's community air monitoring project show VOC spikes in communities nearby oil and gas infrastructure that are not captured by the limited network of state monitoring stations or addressed by state permitting and enforcement actions. Applicant's project would begin to fill the egregious gaps in air monitoring that allow pollution from oil and gas infrastructure to go unchecked.

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[1] Ohio EPA, ALL OHIO AIR TOXICS REPORT (2010), https://epa.ohio.gov/static/Portals/27/atu/AllOhioAirToxicsReport2010.pdf.

[2] Appalachian Regional Commission, *Classifying Economic Distress in Economic Counties* (2022), https://www.arc.gov/classifying-economic-distress-in-appalachian-counties/

EARTHJUSTICE
BECAUSE THE EARTH NEEDS A GOOD LAWYER

For the past three years, Earthjustice has collaborated with FracTracker, and its close partner FreshWater Accountability Project ("Freshwater"), to protect the health and environment of Appalachian communities targeted for oil, gas, and petrochemical development. And for the past decade, these same communities have relied on FracTracker and FreshWater's research, data, maps, and advocacy tools to begin to quantify the environmental harms they are experiencing. FracTracker's interactive maps include expertly gathered data that can be used by frontline communities, government agencies, researchers, and policymakers. Communities have used FracTracker's maps and data to participate in public comment periods for environmental permits and rulemakings, and FracTracker has compiled data and provided maps responsive to the needs of government agencies charged with environmental decision-making. FracTracker regularly hosts webinars to disseminate data and maps, answer community members' questions, and receive input from frontline communities on how to improve its tools and focus its research.

FreshWater, FracTracker's close partner in this work, holds strong relationships with Appalachian communities impacted by legacy and current fossil fuel infrastructure in Ohio and West Virginia and plays a critical advocacy role—ensuring frontline communities understand regulatory responsibilities and connecting adversely impacted individuals with resources to obtain help. FreshWater has built these relationships, in part, due to its strong commitment to science, and its ability to partner with organizations—like the American Geophysical Union and Create Labs—to bring monitoring equipment and scientists into frontline communities. This practical support helps communities obtain the data they need to effectively communicate their environmental and public health burdens to local, state, and federal decisionmakers and to advocate for diligence in state permitting and enforcement actions.

We are pleased to have partnered with FracTracker and FreshWater to date, and we look forward to our continued partnership. Please do not hesitate to contact us with any additional questions about the excellent work of these trusted organizations.

Sincerely,

Megan Hunter, Senior Attorney

Cyndhia Ramatchandirane, Staff Scientist

FracTracker Alliance
216 Franklin Street, Suite 400
Johnstown PA 15901

March 13, 2022

Dear Ms. Smith,

This letter is in support of the application of Freshwater Accountability Project in collaboration with FracTracker Alliance for the US EPA grant to support community ambient air monitoring for underserved communities.

I have worked for ten years with Leatra Harper of Freshwater Accountability Project as she has fought to protect the health and safety of Ohioans from industrial pollution via several planned and existing industrial businesses. This included an education campaign to teach Ohioans about the health ramifications of shale oil and gas extraction in Ohio. She has networked with grassroots groups and numerous rural communities in Southeast Ohio particularly.

Leatra and Freshwater Accountability Project have organized educational seminars and community involvement projects over the last decade. She communicates clearly with people. Her considerable organizational skills have resulted in successful programs uniting people and small groups into effective agents for change. Her excellent research and superb writing style have convinced foundations and other grantors to assist communities which have been exposed to pollutants. Freshwater Accountability Project as an organization which works doggedly to promote the health and protect the safety of Ohioans through careful stewardship of Ohio's water and protection of Ohio's air.

Sincerely,

Deborah Cowden MD
Chairman, Ohio Health Project
Member, FaCT Board of Directors

AGU THRIVING EARTH EXCHANGE

1 March 2022

Shannon Smith
FracTracker Alliance
216 Franklin St.
Suite 400
Johnstown, PA 15901

Dear Ms. Smith,

I am writing in support of the FracTracker's proposal for a USEPA grant to support community ambient air monitoring for underserved communities. (RFA Number: EPA-OAR-OAQPS-22-01). This builds on ongoing work conducted by your respective organizations alongside the AGU Thriving Earth Exchange-sponsored work in Belmont County, Ohio with the Concerned Ohio River Residents. It will enable the extension and enlargement of critical investigative and community engagement work that has been led by these collaborators over several years in Belmont County, Ohio. Not only is this research and work important to understand and respond to air quality risks faced by underserved communities, but the scope of work has been defined by representatives of those communities themselves.

We have collaborated with the Freshwater Accountability Project on several community science initiatives in the state of Ohio and have observed not only strong project management performance from this organization, but also attention to the inclusive integration of community priorities in directing project work. This proposal additionally includes the involvement of Garima Raheja, an AGU Thriving Earth Exchange Community Science Fellow, and Lyssa Freese, a volunteer scientist – both of whom have significant experience partnering with underserved communities to ask and answer those communities' scientific questions.

The Freshwater Accountability Project, FracTracker, and contributing individuals are well qualified and poised to conduct this work and serve as regional leaders of community ambient air monitoring. Community science—like the work this initiative proposes—is an important component of strengthening the connections between science and society, and AGU Thriving Earth Exchange is pleased to support it.

Sincerely,

Raj Pandya
Sr. Director, Thriving Earth Exchange

INTERNAL REVENUE SERVICE
P. O. BOX 2508
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: SEP 28 2012

FRACTRACKER ALLIANCE
C/O COMMUNITY FOUNDATION FOR THE
116 MARKET ST STE 4
JOHNSTOWN, PA 15901

Employer Identification Number:
80-0844297
DLN:
17053263363012
Contact Person:
MITCHELL P STEELE ID# 31360
Contact Telephone Number:
(877) 829-5500
Accounting Period Ending:
June 30
Public Charity Status:
509(a)(3)
Form 990 Required:
Yes
Effective Date of Exemption:
June 1, 2012
Contribution Deductibility:
Yes
Addendum Applies:
No

Dear Applicant:

We are pleased to inform you that upon review of your application for tax exempt status we have determined that you are exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code. Contributions to you are deductible under section 170 of the Code. You are also qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Code. Because this letter could help resolve any questions regarding your exempt status, you should keep it in your permanent records.

Organizations exempt under section 501(c)(3) of the Code are further classified as either public charities or private foundations. We determined that you are a public charity under the Code section(s) listed in the heading of this letter.

Please see enclosed Publication 4221-PC, Compliance Guide for 501(c)(3) Public Charities, for some helpful information about your responsibilities as an exempt organization.

Letter 947 (DO/CG)

FRACTRACKER ALLIANCE

We have sent a copy of this letter to your representative as indicated in your power of attorney.

Sincerely,

Holly O. Paz

Holly O. Paz
Director, Exempt Organizations
Rulings and Agreements

Enclosure: Publication 4221-PC

PROJECT MANAGER – FRESHWATER ACCOUNTABILITY PROJECT

Leatra Harper

Ex. 6 Personal Privacy (PP)

EXPERIENCE

FreshWater Accountability Project, Grand Rapids, OH 2011 - Present
Managing Director
Began grassroots organization to inform, strategize and organize to oppose unconventional shale drilling, water destruction and pollution statewide in Ohio

Success Unlimited Network Coaching 2002 – Present
Personal and Professional Coach

- Coach clients in ways to improve personal and professional performance and results; collaborate to develop personal objectives and follow-up to foster self-accountability and empowerment. Goal setting and achievement coaching.
- National and international presentations on coaching and authenticity
- Co-Author; Energetic Coaching; Being and Doing with Spirit

Critical Business Analysis, Perrysburg, OH 2000 – 2002
Sales and Marketing Manager, Primavera Project Management Software

- Responsible for development and publication of marketing materials, recruitment, hiring and training of sales personnel, customer liaison and promotional events

Brush Wellman, Inc., Elmore, OH
Project Management - Consultant 1998 - 1999

- SAP implementation, trouble-shooting and policy and procedure development
- Exporting of controlled commodity per Department of Commerce and ITAR regulations
- Developed ISO procedures for exporting controlled commodity per ITAR and US Commerce rules including interpretation and application of governing laws
- Coordinate with internal personnel and communicate with customers to obtain necessary paperwork and approvals for export

Government Contract Administrator/Inside Sales Manager 1986 – 1990

- Responsible for DOE government contract compliance; processing of new contract rewards and review of requirements; internal follow-up to insure conformance with contractual obligations
- Negotiation of new multimillion-dollar contracts and revisions
- Project management to insure contract performance per terms negotiated
- Government contractor liaison for quality control, material deviation requests, contract compliance, and yearly audits and periodic reviews
- Hiring, training and performance review for inside sales employees

EDUCATION

Master of Organization Development, Cum Laude, Bowling Green State University
BS, Human Resource Development, Magna Cum Laude, University of Toledo
Associate Degree, Applied Business Science, Terra Community College
Certified HeartMath Practitioner and Team Spirit Facilitator

Walter E. Auch III, Ph.D.

Ex. 6 Personal Privacy (PP)

EDUCATION

Ph.D. **University of Vermont** (2010) – Plant and Soil Science, specialized in Terrestrial Biogeochemistry.
Dissertation: *Modeling the interaction between climate, chemistry, and ecosystem fluxes at the global scale.*

M.S.-ABD **Virginia Tech** (2005) – Department of Forest Resources and Environmental Conservation.
Thesis: *The physical, chemical, biological, and topographic traits of strip-mines conducive to reforestation with native hardwoods.*

B.A. **University of Vermont** (2000) – Plant and Soil Science. Research interests included plant propagation and taxonomy as well as soil biology/food webs.

PROFESSIONAL AND TEACHING EXPERIENCE

FracTracker Alliance, *2012 to Present,* Great Lakes Program Coordinator, and Staff Photographer
Research and map the impacts of hydraulic fracturing and associated silica sand mining in the Upper Midwest through the lens of water, waste, and land-use impacts; Created organization's aerial image and drone footage libraries; Published 1-2 peer-review papers per year; Initiated the organization's "Energy Audio Stories" audio archive of impacted individuals; Authored or co-authored 2-3 grants per year.

***Post-Doc* Cleveland Botanical Garden, *2011-2012*, Redeveloping Vacant Land as Green Infrastructure in Great Lakes Cities, Project 949 of the Great Lakes Protection Fund (GLPF)**
Quantify the C, N, and P pools and fluxes associated with disparate restoration strategies including constructed wetlands, grasslands, temperate forests, and low-input organic community gardens. Develop idealized representations of various Vacant Land Repurposing (VLR) strategies that would maximum carbon sequestration, reduce heat island impacts, slow the urban hydrologic cycle, and generate local jobs.

***Post-Doc* Green Mountain College, *2011*, Co-investigator for the Long Term Ecological Assessment of Low Energy Farm Systems (LEAFS). Primary Investigator: Kenneth Mulder**
Work with LEAFS team to establish, maintain, and quantify inputs and outputs from the experimental plots from high-input conventional to low-input draft animal powered agriculture. Perform all modeling tasks and work with Co-PI Mulder to create literature suitable for peer-review publication and broader audiences.

AgRefresh, 2010-2011, Greenhouse Gas Modelling of Hybrid Poplar Grown for Bioenergy in Western & Eastern Oregon
Developed a model of above- and belowground CO_2, CH_4, and N_20 sources and fluxes within a novel agroforestry setting. Modeled the net Biogeochemical Capture and Storage (BCS) capability of these systems relative to native Douglas Fir and Sage Brush ecosystems in the Northwest.

University of Vermont's Drizo Lab, 2009-2011, Developed Nation Agricultural Greenhouse Gas Modeling
A) Modeled Greenhouse Gas fluxes in the agricultural sectors of developed nations, B) Phosphorus loading potential for freshwaters in developed nations, C) Quantify the potential of manure and existing agricultural grassland biomass to contribute to individual state's energy portfolios, D) Estimated the contribution of wildlife ruminants in developed nations to annual Greenhouse Gas emissions, and E) the monetize of manure and above/belowground grass biomass from a Carbon Capture and Storage (CCS) policy perspective.

BOARDS AND COMMITTEES

Buckeye Environmental Network, Chair (Fall 2019 – present), Vice Chair

NAACP Ohio Environmental Justice and Legislation Writing Advisory Board (Spring 2019 – present)

City of Shaker Heights Tree Advisory Board (2019 – present)

Faith Communities Together for a Sustainable Future (FaCT), Vice Chair (Fall 2018 – present)

Midwest Environmental Advocate's "Frac Sand Mining" working group (July 2016 – 2019)

MEMBERSHIPS

Soil Science Society of America (2003 – 2018);
Ecological Society of America (2005 - 2012)
American Geophysical Union (2005 – 2012)

ADDITIONAL WORK AND REFERENCES: *Please see appended References and Curriculum Vitae.*

Ex. 6 Personal Privacy (PP)

PUBLICATIONS

• **Recent Papers**

1. Saroka, S., Auch, T., and N. Bapat. 2021. Do terrorist/militant/insurgent groups strategically target oil and gas infrastructure, and if so, does this affect global energy prices. Target Journal *Conflict Management and Peace Science* or *The Journal of Conflict Resolution.*
2. Auch, T., Warren, J., and T. Oatts. 2021. A Methodology for Determining the Extent of Intrastate Gas Gathering Pipelines in Ohio, West Virginia, and Pennsylvania. Target Journal *Journal of Environmental Geography.*
3. Bratman, E., Auch. T., and B. Stinchfield. 2022. The Fracking Frontier in the United States: A Case Study of Foreign Investment, Civil Liberties and Land Ethics in the Shale Industry. *Development and Change.* Spring/Summer 2022
4. Palmer, R.C., Short, D., and **Auch, W.E.** 2019. The Human Right to Water and Unconventional Energy. In *Regulating Water Security in Unconventional Oil and Gas*, Eds. Buono, R.M., Gunn, E.L., McKay, Staddon, C., Springer, Chapter 3, Pgs. 39-67.
5. Stinchfield, B., **T. Auch**, and E. Bratman. 2020. Energy Security, International Investment, and Democracy: The Case of the United States Shale Oil and Gas Industry. *Democracy and Security.* Volume 17
6. Strube, J., Thiede, B., and **W.E. Auch**. 2020. Proposed pipelines and environmental justice: Exploring the association between race, socioeconomic status, and pipeline proposals in the United States. *Rural Sociology.* Fall, 2020.
7. Palmer, R.C., Short, D., and **Auch, W.E.** 2018. The Human Right to Water and Unconventional Energy. *International Journal of Environmental Research and Public Health.* 15(9), 1858.
8. Malone, S., Kelso, M., **Auch, W.E.** 2015. Inconsistencies with Data from Shale Gas and Oil Basins. *Journal of Environmental Science and Health, Part A.*
9. Copenheaver, C.A., J.M. Matthews, J.M. Showalter, and **W.E. Auch.** 2008. Forest stand development patterns in the southern Appalachians. *Northeastern Naturalist.* 13(4):477-494.
10. **Auch, W.E**., J.A. Burger, and D.O. Mitchem. 2005. Survival and growth of early- and late-successional Appalachian hardwoods on reclaimed mined land. *In* R.I. Barnhisel (ed.) Working together for innovative Reclamation. 22th National Conf. American Society of Mining and Reclamation. June 19-23, 2005. Breckenridge, CO.
11. **Auch, W**.E., J.A. Burger, and D.O. Mitchem. 2005. Hardwood stocking after five years on reclaimed mined land in the Central Appalachians. *In* R.I. Barnhisel (ed.) Working together for innovative Reclamation. 22th National Conf. American Society of Mining and Reclamation. June 19-23, 2005. Breckenridge, CO.
12. **Burger, J.**, Amichev, B., Auch, W.E., Showalter, J., and D. Mitchem. 2009. Reforestation of mined land for productivity land uses and environmental quality. *In* 2005 Powell River Project Research and Progress Reports.
13. **Burger, J.**, Amichev, B., Auch, W.E., Showalter, J., and D. Mitchem. 2006. Reforestation of mined land for productivity land uses and environmental quality. *In* 2004 Powell River Project Research and Progress Reports.
14. **Auch, W.E.,** J.A. Burger, and D.O. Mitchem. 2004. Influence of site factors on the survival and growth of early- and late-successional Appalachian hardwoods on reclaimed mined land. p. 240-266. *In* R.I. Barnhisel (ed.) Working together for innovative Reclamation. 21th National Conf. American Society of Mining and Reclamation. April 18-22, 2004. Morgantown, WV.
15. **Burger, J.**, Amichev, B., Auch, W.E., Showalter, J., and D. Mitchem. 2003. Reforestation of mined land for productivity land uses and environmental quality. *In* 2003 Powell River Project Research and Progress Reports.
16. Burger, J.A., **W.E. Auch**, R.G. Oderwald, and M.H. Eisenbies. 2003. White pine growth and yield on a mined site in Virginia: response to thinning and pruning. p. 240-266. *In* R.I. Barnhisel (ed.) Working together for innovative Reclamation. 20th National Conf. American Society of Mining and Reclamation. June 3-6, 2003. Billings, MT.

SHANNON M. SMITH

Ex. 6 Personal Privacy (PP)

EDUCATION

- Project Management certification, Monterey Institute of International Studies. *June 2014, Washington, D.C.*
- BA in Cultural Anthropology, Reed College. *May 2014, Portland, OR*
- International Baccalaureate, United World College. *May 2010, Montezma, NM*

EXPERIENCE

FRACTRACKER ALLIANCE

Executive Director, *October 2021 – Present*

- Fundraising – Cultivate and maintain relationships with funders and donors to steadily increase revenue. Write grant applications and reports.
- Administrative oversight – Determine payroll allocations based on activities and funding sources. Approve timesheets and expenses. Assure legal compliance with state and federal requirements. Update the Board of Trustees on financial status, operational issues, and programmatic progress.
- Strategic planning & implementation – Ensure project deliverables and deadlines adhere to grant agreements. Host team strategy planning sessions.
- Staff management – Review staff monthly reports and provide feedback. Regularly check in with each staff member to troubleshoot issues and provide programmatic guidance. Solicit feedback and improve internal operational processes and communications practices accordingly.
- Public representation – Represent FracTracker at a variety of events, panels, grantee focus groups, etc.

FRACTRACKER ALLIANCE

Manager of Communications & Development, *June 2019 – Present*

- Communications – Write and edit articles on key issues related to oil and gas development. Produce videos and audio stories to engage diverse stakeholders in specific campaign goals. Refine the website's design and content via User Experience (UX) research.
- Fundraising – Plan annual fundraisers, one of which increased donations 74% from 2019 to 2020. Identify and cultivate new prospective donors and manage relationships with existing donors. Assist funder prospecting and grant proposal development to ensure an $875k+ annual budget.
- Alliance building – Cultivate and maintain relationships with dozens of partner organizations. Formed a campaign group of over 30 individuals from 14 organizations to address issues related to the Falcon Pipeline, significantly increasing media coverage of its regulatory and safety issues.
- Event planning – Hosted over a dozen events including an environmental justice docufilm series, an international exchange program, webinars with experts in environmental health, and FracTracker's annual award program. Spearheaded a national event with Break Free From Plastic, which was attended by the Department of Energy, state and federal regulators and elected officials, grassroots activists, and environmental nonprofit leaders from across the country.

SECOND MILE HAITI

Communications & Development Consultant, *October 2018 – September 2020, Haiti/United States*

- Communications – Re-designed marketing collateral, increasing the newsletter list by 10% within the first month of my contract.
- Development – Managed fundraising campaigns, including an annual giving campaign that increased donations by 25% compared to the previous year. Wrote successful grant proposals for up to $300k. Implemented strategies to increase average individual donation size and improve donor retention.

DAI

Community Grants Specialist, *October 2018 – December 2019, Cap-Haitien, Haiti*

- Grassroots development – Partnered with local government officials to host community development forums.
- Strategic planning & grant giving – Designed organizational strategy planning exercises and hosted workshops for community-based organizations to manage grants up to $25,000.

SUSTAINABLE ORGANIC INTEGRATED LIVELIHOODS (SOIL)

Marketing & Sales Adviser, *Jan 2016 – Sept 2018, Cap-Haitien and Port-au-Prince, Haiti*

- Marketing strategy – Led multiple marketing teams in planning and implementing marketing budgets and strategies. Trained sales teams of over 50 employees on customer service, prospect identification, and conversion strategies.
- Data management – Designed custom customer relationship management systems in Excel and Salesforce. Created input forms in the mobile app Taroworks.
- Research – Designed extensive satisfaction surveys and other user feedback surveys. Trained and supervised enumerators. Formed a research partnership with the Haitian water and sanitation ministry.

SUSTAINABLE ORGANIC INTEGRATED LIVELIHOODS (SOIL)

Program Manager, *Dec 2014 - Dec 2015, Cap-Haitien and Port-au-Prince, Haiti*

- Media relations – Ensured consistent and high-quality promotional content and media coverage by collaborating with filmmakers, photographers, graphic designers, and journalists from National Geographic, BBC, Al Jazeera, New York Times, and Vice News.
- Strategic communications – Managed the organization's digital brand across social media platforms, blog, and newsletter. Presented SOIL's work at conferences. Gave tours and presentations to major donors and potential donors. Increased the organization's Facebook following from 2,500 to over 10k.

SUSTAINABLE ORGANIC INTEGRATED LIVELIHOODS (SOIL)

Program Assistant, *July 2014 - Nov 2014, Cap-Haitien and Port-au-Prince, Haiti*

- Administrative support – Ran weekly finance reports and monthly payroll. Created staff contracts.
- Fundraising – Increased monthly recurring donations through fundraising campaigns. Secured program budgets by writing winning grant applications for $20,000+.

TRAIL OF SEEDS

Co-Founder & Executive Director, *June 2011 – January 2014, Various international locations*

- Grassroots development – Achieved key improvements for community-based organizations and activists by designing media and strategy workshops and allocating micro-grants.

Environmental Protection Agency (EPA)
Enhanced Air Quality Monitoring for Communities
FY 2022 Request for Proposals (RFP) EPA-OAR-OAQPS-22-0

Community-Based Ambient Air Monitoring Project to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley

Quality Assurance Plan

Quality assurance of the data will be led by the Air Monitoring Fellow, with assistance by project partners. Here we discuss the three key aspects of our Quality Assurance plan: 1) co-location of low cost sensors with EPA monitors, 2) speciated testing alongside low cost sensors, 3) use of data analysis and correction factors for low cost sensors.

1) Quality assurance for low-cost monitors. Stationary air quality monitoring stations maintained by the EPA cost tens of thousands of dollars and receive routine inspection and calibration by trained technical staff to assure utmost precision and accuracy. We plan to co-locate PurpleAir monitors with all three EPA monitors located within the project's target region– in the Ohio town of Shadyside, and the small cities of Wheeling and Moundsville, West Virginia. $PM_{2.5}$ data collected from the co-located PurpleAir monitors will be compared with data generated by the EPA monitors to evaluate the accuracy and precision of the low-cost monitors operating in the field. provide a baseline and we will track the drift of these monitors compared to the EPA monitors so that we can adjust the other monitors with the proper correction factors. Correction factor techniques are discussed below.

2) Speciated testing alongside low-cost sensors
EPA monitors do not have data on VOC's, so we have developed an alternative plan for quality assurance, by using Honeywell MultiRAE sensors, summa canisters, and the SPod auto summa. Each of these will be used to validate the AirViz VOC sensors. The automatic data collection (with the SPod auto summa) will validate data during spikes in VOC's, and manual measurements (MultiRAE and manual summa canisters) will validate data from both the baseline and spikes.

The manual methods will be deployed to both validate baseline data and spikes. By deploying both the MultiRAE and the manual summa canisters at the same time, we will collect data from three sources that will be used for cross-comparison. The MultRAE will be bump tested prior to each use for this purpose, and calibrated at least every six months (Honeywell). At the time of summa canister deployment the person deploying the canister will record pressure, date and time, exact location of the canister and weather conditions. A video of the deployment will also be made for reference if needed. A spreadsheet will be kept of all summa canister deployment details and links to videos of deployment.

The SPod auto summa will collect samples once tVOC readings exceed a certain threshold. This threshold will be determined based on measurements at the location of deployment, such that it is triggered during spikes in VOC levels relative to the mean concentrations in that area.

The following steps will be used for SPod data analysis (Eastern Research Group, Inc.):
• SPod data visual inspection and thresholding to protect against "off scale" conditions where events are missed due to having the threshold set too high.
• SPod data visual inspection to investigate rapid relative humidity swings to ensure any measured events are not due to rapid climate changes which can affect the PID sensors.
• SPod data visual inspection to identify anomalous data drop-out conditions.
• Use of concentration wind rose plots to understand source direction.
• Review of 5-minute averaged PID data summary files for each SPod performed daily.
• Review of all daily data (one full 24-hour period from 00:00 to 24:00) including met sensors from each SPod, performed at least once per week.

3) Use of data analysis and correction factors for low cost sensors

AirView has a number of features that the Fellow will make use of in order to ensure that the data that is publicly available to community members has a baseline level of comparability, accuracy and completeness. AirView conducts automated quality control by removing readings that are outside the specified operating range of the sensor in use. For PurpleAir monitors, AirView applies a quality control algorithm that removes readings when the two PM sensors appear to disagree based on a two-sample t-test. AirView provides the option to apply the PurpleAir correction equation developed by the USEPA Office of Research and Development. AirView will also automatically alert the Fellow, alongside project partners at EHP, when low cost monitors are offline for more than 24 hours. If monitors are alerted as offline, the Fellow will then collect and reset the monitor so that it can be re-incorporated into the network. AirView provides information about atmospheric stability to help determine if pollutant levels are being exacerbated by weather conditions. The atmospheric stability calculation includes humidity, which could be extracted and presented as well for this visual inspection for the AirViz and PurpleAir monitors.

Additional methods beyond those incorporated into the EHP AirView app include the application of Gaussian mixture regression (GMR) methods to calibrate PurpleAir monitors in the area (McFarlane et al.). We have previously applied these methods with TEX partners, using them to find mean $PM_{2.5}$ concentrations, and the inclusion of colocated monitors alongside EPA monitors will improve the accuracy of these methods.

Works Cited

Eastern Research Group, Inc. "Quality Assurance Project Plan for SPod Monitoring at the Denka Performance Elastomer Facility in LaPlace, Louisiana." *US EPA*, February 2020, https://www.epa.gov/sites/default/files/2020-03/documents/spod_monitoring_qapp_final_3-_2020_address_redacted_002.pdf. Accessed 23 March 2022.

Honeywell. "MultiRAE User's Guide." *Honeywell*, 2019, https://prod-edam.honeywell.com/content/dam/honeywell-edam/sps/his/en-us/products/gas-and-flame-detection/documents/sps-his-multirae-usersguide-rev-k-en.pdf. Accessed 24 March 2022.

McFarlane, C., et al. "First Measurements of Ambient PM2.5 in Kinshasa, Democratic Republic of Congo and Brazzaville, Republic of Congo Using Field-calibrated Low-cost Sensors." *Aerosol and Air Quality Research*, 25 March 2021, https://aaqr.org/articles/aaqr-20-11-oa-0619. Accessed 24 March 2022.

FRACTRACKER ALLIANCE

EPA-OAR-OAQPS-22-01
Enhanced Air Quality Monitoring for Communities
Environmental Protection Agency

Project Title: Community-Based Ambient Air Monitoring to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley

Additional Congressional Districts

Additional Congressional District:

WV-001

Yuri A Gorby

Ex. 6 Personal Privacy (PP)

RELAVENT BACKGROUND

Dr. Yuri Gorby received his BS degree in Biology from Bethany College in his hometown of Bethany, WV and earned his PhD in Microbiology from the University of New Hampshire. As a research scientist with the US Geological Survey in Reston, VA and during his 15 years with the DOE National Lab located at the Hanford Nuclear Reservation in Richland, WA, Dr. Gorby advanced the understanding of complex biogeochemical reactions that influence the fate and transport of heavy metals, radionuclides and organic pollutants in contaminated groundwater and subsurface environments. More recently, Dr. Gorby served as the Howard N. Blitman Chair for Civil and Environmental Engineering at Rensselaer Polytechnic Institute in Troy, NY where he educated students and colleagues on the environmental and human health effects of fracking and related industrial activities. Three years ago, Dr. Gorby returned to the Ohio Valley where he works with several environmental groups and universities to address fundamental scientific questions related to unconventional oil and gas development and emerging petrochemical industrialization.

EDUCATION

PhD in Microbiology, 1989	University of New Hampshire, Durham, NH.
BS in Biology, 1983	Bethany College, Bethany, WV.

EXPERIENCE

Scientific Advisor and Staff Scientist for Freshwater Accountability Project and Concerned Ohio River Residents, southeastern Ohio and West Virginia's northern panhandle (2019-2022)
Installed and maintained low-cost air quality monitors at locations where residents report serious negative health effects from nearby oil and gas infrastructure. Collected soil and groundwater samples in proximity to a variety of oil and gas installations and evaluated chemical and radiological components.

Howard N Blitman Endowed Chair, Civil and Environmental Engineering, Rensselaer Polytechnic Institute, Troy NY (2012-2019)
Developed new coursework and student research projects in geomicrobiology and environmental engineering that targets senior level undergraduate and graduate student programs. Educated students and colleagues to the environmental and human health risks of unconventional oil and gas development, which included numerous field trips to shale gas fields throughout Appalachia.

Associate Research Professor, Marine Environmental Biology Department, University of Southern California, Los Angeles, CA (2011-2012)
Established a multidisciplinary research program to investigate the molecular and electronic properties of conductive protein filaments called bacterial nanowires in diverse microbial systems. Mentored undergraduate, graduate and post-doctoral researchers in fundamental and advanced principles in controlled cultivation technologies, including continuously stirred tank reactors, fixed-film bioreactors, and biofilm reactors containing poised-potential electrodes as electron donors and acceptors. Developed international collaborations to investigate the prominence of bacterial nanowires in diverse microbial systems ranging from redox transition zones in marine sediments to opportunistic, pathogenic biofilms.

Assistant Professor, J. Craig Venter Institute, San Diego CA (2006-2011)
Established and directed the Electromicrobiology Group to develop and apply controlled cultivation techniques for investigating microbial physiology and ecology of a broad spectrum of microorganisms. Collaborated with physicists to establish a mechanistic understanding of electron transfer through and along conductive bacterial nanowires. Supervised post-doctoral research and hosted international visiting scientists to integrate concepts of extracellular electron transfer into microbial fuel cells research, wastewater treatment, and biogeochemical processes of redox transition zones in marine and freshwater environments.

Senior Staff Scientist, Environmental Microbiology Group, Pacific Northwest National Laboratory, Richland, WA (1993-2006)
Designed and directed the Microbial Cell Dynamics Laboratory, which is still considered one of the top controlled cultivation facilities within the DOE National Lab system. Maintained a programmatic funding stream to support research principally targeting enzymatic reduction of heavy metals, radionuclides and chlorinated hydrocarbons.

Adjunct Faculty, Washington State University, Richland, WA (2000-2006) Taught courses in microbial physiology and ecology. Mentored undergraduate and graduate students and served as research advisor.

Post Doctoral Research Fellow, Pacific Northwest National Lab, Richland WA (1991-1993)
Developed facilities and approaches needed for investigating heavy metal and radionuclide reduction at DOE National Labs. Attended DOE program planning workshops that lead to the development of the Natural and Accelerated Bioremediation Research Program (NABIR). Developed bioprocess for removing uranium from contained waste streams. Incorporated anaerobic techniques for investigating the role of metal reducing bacteria in reduction of iron in clay minerals and the reduction of chelated forms of cobalt.

National Research Council Post Doctoral Research Fellow, US Geological Survey, Reston VA (1989-1991) Discovered enzymatic reduction and precipitation of uranium by dissimilatory iron reducing bacteria. Developed approaches for quantifying uranium reduction by bacteria. This research lead to the development of multiple DOE programs to investigate biogeochemical processes influencing the fate and transport of heavy metals and radionuclides in contaminated subsurface systems.

Manifest for Grant Application # GRANT13580535

Grant Application XML file (total 1):

1. GrantApplication.xml. (size 30337 bytes)

Forms Included in Zip File(total 6):

1. Form ProjectNarrativeAttachments_1_2-V1.2.pdf (size 16033 bytes)

2. Form SF424_3_0-V3.0.pdf (size 24337 bytes)

3. Form SF424A-V1.0.pdf (size 22866 bytes)

4. Form EPA4700_4_3_0-V3.0.pdf (size 22728 bytes)

5. Form OtherNarrativeAttachments_1_2-V1.2.pdf (size 16010 bytes)

6. Form EPA_KeyContacts_2_0-V2.0.pdf (size 37196 bytes)

Attachments Included in Zip File (total 16):

1. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1248-Resume - Yuri Gorby.pdf application/pdf (size 129442 bytes)

2. ProjectNarrativeAttachments_1_2 ProjectNarrativeAttachments_1_2-Attachments-1249-Final Ohio Air Monitoring Grant Application Narrative.pdf application/pdf (size 460417 bytes)

3. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1247-Resume - Ted Auch.pdf application/pdf (size 151012 bytes)

4. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1236-Proof of nonprofit status - FracTracker Alliance IRS approval letter.pdf application/pdf (size 56950 bytes)

5. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1237-Quality Assurance Plan.pdf application/pdf (size 231119 bytes)

6. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1239-Letter of Support - Earthjustice.pdf application/pdf (size 451466 bytes)

7. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1238-Letter of Support - CREATE Lab.pdf application/pdf (size 105148 bytes)

8. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1241-Letter of Support - FACT.pdf application/pdf (size 305130 bytes)

9. SF424_3_0 SF424_3_0-1235-Additional Congressional Districts Attachment.pdf application/pdf (size 198341 bytes)

10. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1240-Letter of Support - Environmental Health Project.pdf application/pdf (size 177544 bytes)

11. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1243-

Letter of Support - Thriving Earth Exchange.pdf application/pdf (size 128262 bytes)

12. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1242-Letter of Support - Freshwater Accountability Project.pdf application/pdf (size 234554 bytes)

13. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1245-Resume - Lea Harper.pdf application/pdf (size 55189 bytes)

14. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1244-Resume - Ana Tsuhlares Hoffman.pdf application/pdf (size 79335 bytes)

15. SF424_3_0 SF424_3_0-1234-Areas Affected by Project attachment.pdf application/pdf (size 205764 bytes)

16. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1246-Resume - Shannon Smith.pdf application/pdf (size 148452 bytes)

FRACTRACKER ALLIANCE

EPA-OAR-OAQPS-22-01
Enhanced Air Quality Monitoring for Communities
Environmental Protection Agency

Project Title: Community-Based Ambient Air Monitoring to Evaluate Criteria Pollutants and Air Toxics Related to Unconventional Oil and Gas Development in the Ohio Valley

Areas Affected by Project

The following communities and surrounding areas will be affected by this project:

Steubenville, OH, Jefferson County 43952

Steubenville, OH, Jefferson County 43953

Shadyside, OH, Belmont County 43947

Wellsburg, WV, Brooke County 26070

Follansbee, WV, Brooke County 26037

Weirton, WV, Brooke County 26062

Moundsville, WV, Marshall County 26041

Weirton, WV, Hancock County 26062